The Aerospace Corporation

Requirements and Modeling

A STRUCTURED APPROACH

System requirements are often poorly structured and poorly written, negatively impacting system utility, performance, and cost. Special techniques are available to help organize and analyze requirements to fix requirement problems. An overall document tree is useful to structure the different sets of requirements and supporting information. The relationship of supporting documents such as the concept of operations, mission needs statement, requirements documents, scenarios, and test plans are essential to having proper system requirements. This tutorial will present these techniques and provide essential principles that will help to develop a structured set of complete and consistent requirements for a system.

Key Themes

- Systems may be characterized from operational and system requirements, model, or design perspectives.
- System architecture views provide a unifying framework for these perspectives.
- Modeling and evaluation of architectures are key to the proper specification and flowdown of system requirements.
- Supporting documents help ensure the requirements are correct.

Who Should Attend

- Systems engineers and systems engineering managers
- Program, product, and acquisition managers

How You Will Benefit

- Become familiar with different specification development strategies
- Understand how system architecture relates to requirements and how various architecture frameworks can be used to organize the development effort
- Learn how to derive operational requirements from the needs of users, operators, operating organizations, and other stakeholders
- Understand the nature of a "capstone requirements document" and its relationship to downstream requirements
- Learn how to develop a "concept of operations" to capture system interaction and drive architecture development
- Learn how to plan, execute, and manage system requirements

The Aerospace Corporation
2350 East El Segundo Boulevard
El Segundo, CA 90245-4691
310.336.5000
www.aero.org/education/

Contact
Call or write for information on class schedules and pricing.
310.336.5504
InstituteCC@aero.org

Course Length

One day

Prerequisite

Technical background and experience in systems engineering

Course Materials

Student textbook containing course slides, case studies, demonstrations, and supplementary material

Instructors

Both instructors are from the Systems Architecture and Engineering Department at The Aerospace Corporation. James Martin is an internationally known writer and lecturer on systems engineering who wrote one of the most widely read books on systems engineering, *Systems Engineering Guidebook,* published by CRC Press. Steven Heidorn is an accomplished systems engineer with over seventeen years of experience across a wide range of defense, intelligence, and commercial systems.

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